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Partition of daily evapotranspiration using stable water isotope method and a modified Shuttleworth-Wallace Model for urban forest area

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Quantification of the contribution of transpiration (T) to evapotranspiration (ET) is important to understand the impact of climate change on the hydrological cycle and guide precision irrigation. In this study, we applied a modified Shuttleworth-Wallace (S-W) model to partition ET for a locust tree forest in jinnan district of Tianjin city.

The new model considers the impact of carbon dioxide emissions on vegetation transpiration and significantly improves the performance of the original S-W model. The Eddy Covariance (EC) and stable water isotope method was used to monitor and partition ET in locust tree forest. Isotope composition of ET (δET), soil evaporation (δE) and vegetation transpiration (δT) were determined using the Keeling-plot method, Craig-Gordon model and Steady-state assumption model (SSA), respectively.